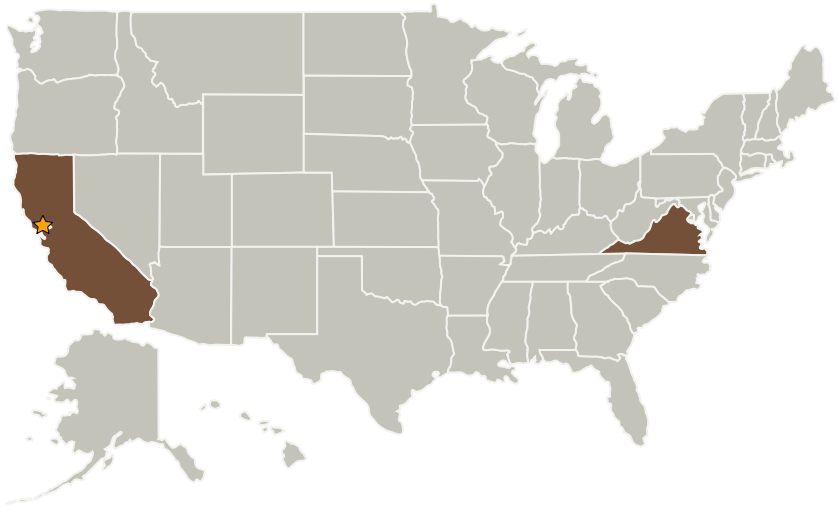
Cell/Tissue Culture Radiation Exposure Facility, Phase I

Completed Technology Project (2006 - 2006)

Project Introduction

We propose to develop a Cell/Tissue Culture Radiation Exposure Facility (CTC-REF) to enable radiobiologists to investigate the real-time radiation effects on cells/tissues at the NASA Space Radiation Laboratory (NSRL) at Brookhaven National Laboratory. Up to 18 bioreactors with various types of cells/tissues can be placed in the radiation target area for either short- or long-term radiation exposure. Samples can be taken and fixed automatically at desired time points on site during exposure to the ion beam. Specimens within the bioreactors can also be moved from the target area to nearby biology laboratories for investigation of delayed radiation effects using a culture transport system that maintains the proper culture environment during specimen transport. The concept for CTC-REF is an evolution and extension of the hardware already developed by Payload Systems for other space life sciences applications. The main advantages of CTC-REF over currently available hardware are: higher sample throughput, automatic sampling and fixation during and after radiation exposure, and accommodation of long-duration, low dose radiation experiments.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Aurora Flight Sciences Corporation	Supporting Organization	Industry	Cambridge, Massachusetts

Primary U.S. Work Locations	
California	Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.5 Radiation
    - TX06.5.1 Radiation Transport and Risk Modeling